Remarks

This paper is responsive to the Office Action mailed March 1, 2006, which set an initial due date of June 1, 2006. This paper is filed with a 3-month extension of time request.

Claims 1-27 are pending in this application. Claims 1-27 were rejected. By the present amendment, claims 1, 3, 4, 17-19, 25 and 27 are hereby amended, claim 14 is canceled and new claims 28-30 are submitted. The amendments and new claims add no new matter.

Specification Objections:

Applicant has amended the first paragraph on page 21 of the application as filed to remove the embedded hyperlinks.

Claim Objections:

Applicant has amended claim 1, thus obviating the typographical error causing step (e) to be listed twice.

Claim Rejections - 35 U.S.C. § 112 second paragraph:

Claims 25-27 have been rejected un 35 U.S.C. § 112 second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Applicant has amended claim 25 to make it even more clear that polynucleotide synthesis that uses the wild-type polynucleotides as templates is blocked by the probe and polynucleotide synthesis that uses the mutant polynucleotides as templates is not blocked by the probe and therefore produces a longer extension product. Since claims 26 and 27 depend from claim 25 no amendment is necessary. Applicant respectfully submits that the amendments overcome the rejection.

Claim Rejections - 35 U.S.C. § 102(a) and § 102(b):

Claims 1-2, 5-6, 14-15, 18, 25 and 27 have been rejected under 35 U.S.C. § 102(a) as allegedly being anticipated by Sun et al. (Nature Biotechnology, February 2002). Claims 1-2, 7-

12, 14, 18, 25 and 27 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Rampersad et al. (US Patent No. 5,830,712). Claims 1-3, 6, 12-14, 17, 18, 25 and 27 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Orum et al. (Nucleic Acids Research, 1993). Claims 1-2, 7, 9, 11, 14, 18 and 25-27 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Seyama et al. (Nucleic Acids Research, 1992).

Applicant respectfully disagrees with the Examiner with respect to the several 102 rejections. Applicant has amended claim 1 step (e) and claim 25 step (a) to make it even more clear that if the polynucleotides are present in the mixture in double stranded form as sense and antisense strands, only one of the sense or antisense strands for each of the wild type and mutant polynucleotides has a target sequence, such that its complimentary strand is not capable of being a template for extension. As such, the claims are directed to use of a single primer that is targeted to only the sense or the antisense strand of the mutant and wild type polynucleotides. The claims do not include use of a pair of primers wherein one primer is targeted to a sense strand and one to an antisense strand.

In sharp contrast to Applicant's claimed method, the methods of Sun et al., Rampersad et al., Orum et al., and Seyama et al. all share the same teaching with respect to the use of the disclosed primers. Each of the cited references describes a PCR reaction that requires both a forward and reverse primer for use in reactions that include both a sense and antisense strand of a polynucleotide, both of which are targeted for PCR amplification. As is well known to those skilled in the art, PCR requires both a forward and reverse primer to anneal to both polynucleotide sense and antisense strands for the PCR reaction to succeed. Furthermore, in the methods of Sun et al., Rampersad et al., Orum et al., and Seyama et al., the PCR reactions generate newly synthesized sense and antisense polynucleotide strands due to the use of both a forward and reverse primer. According to the methods disclosed in the several cited references, the newly synthesized strands produced in the PCR reactions would not be blocked by a probe, and thus lead to full-length extension products of both the mutant and wild-type polynucleotides, instead of full-length extension products of only the mutant polynucleotide as recited in instant claims 1 and 25. Each and every one of the cited references conspicuously lacks any teaching of a reaction in which a primer is used targeting a sequence in only one of the sense or antisense

strands such that the complimentary strand is not capable of being a template for extension. None of these references suggests or even contemplates reaction conditions that would prevent PCR amplification of both polynucleotide strands. Lacking such teaching, Sun et al., Rampersad et al., Orum et al., and Seyama et al. do not anticipate the instant claims. Applicant respectfully submits that claims 1 and 25 and all claims that depend therefrom are allowable.

Claim Rejections - 35 U.S.C. § 103(a):

Claims 3, 4 and 16 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over either Seyama et al., Rampersad et al. or Sun et al. in view of Nollau et al. (Clinical Chemistry and Laboratory Medicine, 1999).

MPEP 2142 provides that to establish a *prima facie* case of obviousness, three basic criteria must be met: (i) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the teachings; (ii) there must be a reasonable expectation of success; and (iii) the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and must not be based on the Applicant's disclosure.

Applicant respectfully submits that Seyama et al., Rampersad et al. and Sun et al. do not teach the method of claim 1 as asserted by the Office, for the reasons discussed above. Nollau does not provide what the primary references lack. There is simply no teaching or suggestion in any of the cited references to modify the standard PCR methods described in each of the references so as to prevent amplification of both strands of a polynucleotide template. And there is certainly no teaching in any of the references that any such modification would give a desirable or successful result. Lacking such teaching, alone or combined the references do not teach the method of the base claim 1, and thus cannot render its dependent claims obvious. Applicant respectfully submits that claims 3, 4 and 16 are in condition for allowance.

Claims 19-20, 22 and 23 were rejected were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shuber (US Patent No. 6,280,947 B1) in view of Rampersad et al. or Sun et al. Applicant respectfully submits that Rampersad et al. and Sun et al. do not teach the method of claim 1 as asserted by the Office for the reasons discussed above. The Office further asserts that with regard to claim 19, the method disclosed by Rampersad et al. or Sun et al. meet the limitations of the instant claim with the exception that the method of claim 19 uses a microsatellite template. Applicant again respectfully submits that Rampersad et al. and Sun et al. do not teach the method of claim 1 as asserted by the Office for the reasons discussed above and therefore the method disclosed by Rampersad et al. or Sun et al. does not meet the limitations of claim 19, irrespective of the fact that claim 19 uses microsatellites as templates. Shuber does not provide what the primary references lack. As noted above, there is simply no teaching or suggestion in any of the cited references to modify the standard PCR methods described in each of the references so as to prevent amplification of both strands of a polynucleotide template. And there is certainly no teaching in any of the references that any such modification would give a desirable or successful result. Lacking such teaching, alone or combined the references do not teach the method of the base claim 19, and thus cannot render its dependent claims obvious. Applicant respectfully submits that claim 19 and all claims that depend therefrom are in condition for allowance.

Claims 21 and 24 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shuber in view of Ramperad et al. or Sun et al. and in further view of Percesepe et al. (Genes Chromosomes Cancer, 2000) and Suraweera et al. (Gastroenterology, Dec. 2002). Applicant respectfully submits that Shuber in view of Ramperad et al. or Sun et al. do not teach the method of claim 19 as asserted by the Office for the reasons discussed above. Percesepe et al. and Suraweera et al. do not provide what the primary references lack. As with the other cited references, there is simply no teaching or suggestion in any of the cited references to modify the standard PCR methods described in each of the references so as to prevent amplification of both strands of a polynucleotide template. And there is certainly no teaching in any of the references that any such modification would give a desirable or successful result. Lacking such teaching, alone or combined the references do not teach the method of the base claim 1, and thus cannot

render its dependent claims obvious. Applicant respectfully submits that claims 21 and 24 are in condition for allowance.

Conclusion

Applicant respectfully submits that, in view of the above remarks and amendments, the application, specifically claims 1-13 and 15-30, is now in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

While Applicant believes that any fees that accompany this paper have been calculated correctly, the undersigned hereby expressly authorizes the Office to charge any required fees, or credit any overpayments, to Applicant's Deposit Account No. 03-0172.

Respectfully submitted,

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